

Problem 2.1 Adding Expressions

- A. 1.** Write equations to represent the money M that each student will raise for walking x kilometers.
- a.** $M_{\text{Leanne}} = \square$
- b.** $M_{\text{Gilberto}} = \square$
- c.** $M_{\text{Alana}} = \square$
- 2.** Write an equation for the total money M_{total} raised by the three-person team for walking x kilometers.
- B. 1.** Write an expression that is equivalent to the expression for the total amount in Question A, part (2). Explain why it is equivalent.
- 2.** What information does this new expression represent about the situation?
- 3.** Suppose each person walks 10 kilometers. Explain which expression(s) you would use to calculate the total amount of money raised.
- C.** Are the relationships between kilometers walked and money raised linear, exponential, quadratic, or none of these? Explain.

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2.2 Predicting Profit

The manager of the Water City amusement park uses data collected over the past several years to write equations that will help her make predictions about the daily operations of the park.

The daily concession-stand profit in dollars P depends on the number of visitors V . The manager writes the equation below to model this relationship.

$$P = 2.50V - 500$$

She uses the equation below to predict the number of visitors V based on the probability of rain R .

$$V = 600 - 500R$$

- What information might each of the numbers in the equations represent?

Problem 2.2 Substituting Equivalent Expressions

- A. 1.** Suppose the probability of rain is 25%. What profit can the concession stand expect? Explain.
- 2.** What was the probability of rain if the profit expected is \$625? Explain your reasoning.
- B. 1.** Write an equation that can be used to predict the concession-stand profit P from the probability of rain R .
- 2.** Use this equation to predict the profit when the probability of rain is 25%. Compare your answer with your result in Question A, part (1).
- C. 1.** Write an equivalent expression for the profit in Question B. Explain why the two expressions are equivalent.
- 2.** Predict the probability of rain on a day when the concession-stand profit is \$625. Compare your answer with the result you found in Question A, part (2).
- 3.** Predict the profit when the probability of rain is 0%. Does your answer make sense? Explain.
- 4.** Predict the profit when the probability of rain is 100%. Does your answer make sense?
- D.** Do the equations in Questions B and C represent a linear, exponential, or quadratic relationship, or none of these? Explain.

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